And so I'll show you just a couple in my why this matters.

Because glass is, after all, made of-- there it is up there in case you can't see it.

This is the abundance of elements versus atomic number, and you notice the very top two elements are silicon and oxygen. And so it would be really nice if we could make a lot of stuff out of these really abundant cheap elements.

Think sand.

Could I take sand and make a lot of stuff out of it?

Well, not if I can't control.

Not if I have to heat it up to 3,000 degrees or its viscosity isn't what I want or it doesn't give me the properties I want, but that has changed.

That has fundamentally changed.

So we can now look at materials like this, these super-abundant materials, and we can completely rethink them.

And I'll give you one example.

It's already a few years old, but I think it's just a really cool idea, which is called the Solar Sinter.

And here he's developed this machine that is entirely solar powered.

They're solar cells for the electricity.

And it's a focused beam of light from the sun that gets hot enough to engineer the glass.

So he takes sand from the desert that he's in.

He puts it in a container, and he's got a 3D printer that he's made.

It's entirely solar powered.

There's no fossil fuels, but he can take sand and turn it into something structural.

And so there's a vase that he's made, and you can take that out.

And again, that's just the beginning of rethinking what we could do with these super-abundant materials.

Here's an example from also a few years ago from an MIT lab.

This is Neri Oxman's lab, and she's in the Mediated Matter lab here at MIT, and she's developed a 3D printer.

[VIDEO PLAYBACK]

[MUSIC PLAYBACK]

And so there it is printing something with glass.

And she can print lots of different designs now using glass.

She has a cool video.

And there is the printhead.

And again, 1,900 Fahrenheit.

I'm not sure that I want a 1,900 Fahrenheit printer on my desktop.

But as you can imagine, what they had to do-- I'll just give you one more example and then we'll stop.

What they had to do is understand everything we've just talked about.

How do you engineer the viscosity, the melting point to make it all work in a 3D printer?

The last point I'll give you is this.

I love this.

This is from a few years ago.

It's a group in Japan that made a glass that is as strong as steel.

And what they talk about-- this is what I like.

They say just think of a world where your smartphone wouldn't shatter.

OK, cool.

Buildings could be bolstered against natural disasters, even cooler.

And then somehow they bring it down.

Wine glasses are reassuringly safe.

[LAUGHTER]

Was that really a problem?

I don't know.

And what they did, fabrication was conducted using an aerodynamic levitation furnace where ingredients were floated in the air using oxygen gas and melted together using CO2 lasers, and they get a transparent superglass with 50% alumina.

That was so hard to do because the aluminum didn't want to be a glass.

It wanted to go and become a metal, a crystal.

But by doing it this way, they were able to capture it in the disorder.

All right, have a great night.